

THE MOTOR AGE

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LEADING CONTENTS

	PAGE		PAGE
Big Patent Suit Threatened —The Columbia Electric Vehicle Co. claim to own a patent that gives them the legal right to a monopoly in the manufacture of gasoline vehicles.	417	world gathered from many sources.	431
Weekly Patent Office Budget —An illustrated resume of the latest automobile patents.	425	Critic and Design —Conviction and sound engineering the only safe guides for makers.	433
From the Four Winds —News of the motor		News of the Motor Industry —An illustrated history of the week among the makers.	436
		Motor Racing and Motor Pacing —News of the sport at home and abroad.	442

BIG PATENT SUIT THREATENED

New York, June 8.—Automobilism is in for a fight in the courts over an alleged foundation patent of one of the classes of motor-vehicles, nearly as important and momentous as is the bottom bracket suit to cycling.

The ownership of a patent is claimed covering, it is alleged, all liquid hydrocarbon gas engines connected with road vehicles, and that means all gasoline automobiles; for the claim is that the patent in question is a foundation patent embracing them all and it will be so contended in the courts in the battle about to be begun.

The Columbia & Electric Vehicle Co., originally the automobile department of

the old Pope Mfg. Co., but now one of the component companies of the Electric Vehicle Co., an operating corporation, has served the leading makers of gasoline vehicles in this country with notice of an infringement of the Selden patent, owned by it.

The Automobile Co. of America, 135 Broadway, New York City, a day or two ago received the following letter:

Gentlemen:—Our clients, the Columbia & Electric Vehicle Co., request us to call your attention to the Selden Patent No. 549,160, for a road vehicle propelled by gasoline engine. The first claim of this patent is in the following words:

"1. The combination with a road-locomotive, provided with suitable running

gear including a propelling wheel and steering mechanism, of a liquid hydrocarbon gas-engine of the compression type, comprising one or more power cylinders, a suitable liquid-fuel receptacle, a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device and a suitable carriage body adapted to the conveyance of persons or goods, substantially as described."

There are five other claims relating to various features of the structure.

Our clients inform us that you are manufacturing and advertising for sale vehicles which embody the invention of the Selden patent above mentioned, and, at their request, we notify you of this infringement, and request that you desist from the same and make suitable compensation to the owner of the patent therefor. Yours respectfully,

(Signed)

BETTS, BETTS, SHEFFIELD & BETTS.

Leon Schermerhorn, one of the directors of the company, in calling the attention of the Motor Age man to its receipt, said that his company had replied that it manufactured steam vehicles only and so was not interested in the warning.

Many Receive Notices

Subsequent investigation by your correspondent showed that this same notice had been sent to at least a dozen gasoline motor-vehicle manufacturers, all makers of importance being intended to be included.

The Selden patent was purchased early last spring by the Columbia and Electric Vehicle Co., and one of Motor Age's representatives has heard that the price given was \$30,000 and that the idea of the purchase was to secure an alleged foundation patent, on which to base a claim for the exclusive right to manufacture gasoline motor-vehicles and seek an early enforcement by infringement suits quickly to follow the original letter of warning.

Betts, Betts, Sheffield & Betts, of the Equitable building, and William A. Redding, of the Porter building, are counsel for the Columbia people.

An Attorney Interviewed

The Motor Age man saw one of these gentlemen, who asked not to be quoted directly by name in the matter.

"The letter was sent out to the leading

makers of gasoline automobiles," said he. "I saw the list and should say that there were at least a dozen names on it. The Selden patent is undoubtedly a foundation patent, as one can easily see by reading the specifications, which are very comprehensive. The application for the patent was filed May 8, 1879, which is a long way ahead of the manufacture and use of gasoline motor-vehicles in this country. The patent was granted November 5, 1895.

"Suit will be begun at once to enforce it and I expect that the papers will be served before the close of the present month."

At this writing your correspondent has had no chance to interview gasoline motor-vehicle makers on the opinion of the claims set forth or their probable action in the matter.

A Protective Association Needed

In a similar emergency the independent makers, virtually all defendants in the suit of the cycle trust for the enforcement of the "bottom bracket patent," with similar exclusive control in view, organized the Cycle Trades Protective Association, raised a hundred-thousand-dollar defense fund, insured all makers and dealers against interference, and is now defending the suit very effectively. Whether the gasoline automobile makers will defend separately, as did the Eagle Bicycle Mfg. Co., or through an association, as did the H. P. Snyder Mfg. Co., backed by the Cycle Trades Protective Association, remains to be seen.

At any rate the first gun has been fired in the first great legal battle in the automobile industry.

A PATENT EXPERT'S OPINION

The patent specifications and the letter of the New York solicitors were submitted to an eminent patent attorney of Chicago, by a representative of the Motor Age, for an opinion as to the validity of the patent.

"How do you account for the great difference in the date of the filing of the application and the final granting of the patent?" the attorney was asked.

"That may have been caused by interferences, as is not infrequently the case,"

he replied, "or it may have been caused by Mr. Selden's attorneys purposely—there are ways of doing so, you know."

"It may be that Mr. Selden was a man of enough perspicacity to realize that if his patent were issued to him in the ordinary length of time, that it would be of little value, as the motor-vehicle business, in which he evidently had confidence, was bound to be slow in developing. He may have delayed the patent, himself, in hopes that the industry would have developed, by the time it was issued, to a point where the patent would be of great value, if of any at all, as it is today."

When questioned as to the strength of the claims, the attorney said, "I would not be competent to give an opinion off-hand. This first claim, however, seems to be well worded and strong. How well it would stand the test of the courts, however, could only be told by a thorough and systematic search of the patent records of the time surrounding the filing of the application and before. The clause referring to "a power shaft connected with and arranged to run faster than the propelling wheel" is a trifle ambiguous but could doubtless be made the basis of an attack that would be troublesome, at the very least. From my knowledge of gasoline motor-vehicles, some such reduction of speed seems absolutely necessary."

"It scarcely appears that such a patent could exist without being discovered before this and an attempt made to enforce it, if it were as broad as the Columbia & Electric Vehicle Co. would like to have it appear."

Concerted Action Necessary

As suggested by the New York representative of The Motor Age, concerted action in this matter is desirable.

The Columbia & Electric Vehicle Co. is the manufacturing branch of the Electric Vehicle Co. of New York city—a New Jersey corporation—which controls numerous subsidiary transportation and selling companies. The Columbia & Electric Vehicle Co. is the outgrowth of the motor-vehicle department of the Pope Mfg. Co.,—now a part of the American

Bicycle Co., the trust—and at the head of it is Col. A. A. Pope, one of the leading figures in the trust.

One of the means by which the American Bicycle Co. is attempting to control the bicycle business, is that of trying to enforce what it claims to be a ground patent in bicycle construction—what is popularly known as "the bottom bracket patent."

Through the efforts of the Cycle Age Co. the publishers of The Motor Age, an association of bicycle makers, independent of the trust—and there are a large number of them—was formed, called the Cycle Trades Protective Association, for the purpose of making a common defense to any suit that might be brought against any of its members. To this end, a guarantee fund of \$100,000 was raised.

The anticipated suit was soon brought and is now pending with the best of prospects of securing a final decision in favor of the defendants. A vast amount of evidence as to the patent having been anticipated—the claims are undoubtedly strong—has been unearthed. In securing this evidence the Cycle Age Co. has played a prominent part.

It is more than probable—indeed, almost certain—that the Columbia & Electric Vehicle Co., considering its personnel, will follow the same tactics as has the bicycle trust. With practically unlimited means at its disposal, it will select for its first attack, some company that is none too strong, financially, and, with the best attorneys and the brute force of money, push the suit to a conclusion, without the proper defense having been made. Such a result would be disastrous to all makers of gasoline vehicles and would work incalculable harm to the industry.

By the formation of an association on the lines of the Cycle Trades Protective Association, the Columbia & Electric Vehicle Co. would be given a fight worthy its steel and probably come out second best.

If the formation of such an association be thought desirable, as it doubtless will, The Motor Age and its publishers stand ready to render any and all assistance in their power. In the succeeding remarks

on the patent and in the complete specifications, it will be seen that there is sufficient strength to the patent to give grounds for a vigorous attack and one which would probably prove successful, if the best possible defense be not made. Under these circumstances, the advisability of forming a protective association can scarcely be questioned.

What the Patent Is

Following will be found the complete specifications of Selden's patent, including the drawings. It is probable that the delay in the issuance of the patent was due to numerous interferences, rather than on account of any intentional delay on the part of the patentee, in view of the numerous references to other patents cited.

According to Allen's Digest of Automobile Patents, it appears that there were no less than nine references cited. Even at that, such a delay as sixteen years seems unreasonable.

Among these references there is one of notable importance which says, "I am aware that it was suggested in English provisional specification No. 10 of 1879, that petroleum or like motors 'might be used to provide motive power' for trams-cars and other self-propelling vehicles."

The assumption to having a ground patent is supported principally in the first claim, as quoted in the letter of Betts, Betts, Sheffield & Betts. The point of weakness in this claim lies in the words "a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device."

Any carriage in which there is no provision for permitting the engine to run free when the vehicle, itself, is at a standstill, would evade the Selden patent, thus avoiding the "disconnecting device" in the "combination."

The reference to "a power shaft connected with and arranged to run faster than the propelling wheel" is a little hazy. Reference to previous patents and to the inferences in the Selden patent would be necessary, before attempting to place an exact construction on that phrase.

The specification follows, verbatim:

UNITED STATES PATENT OFFICE.

George B. Selden of Rochester, New York.

ROAD ENGINE.

Specification forming part of Letters Patent No. 549,160, dated November 5, 1895. Application filed May 8, 1879.

To all Whom It May Concern:

Be it known that I, GEORGE B. SELDEN, a citizen of the United States, residing at Rochester, in the county of Monroe, in the State of New York, have invented an improved road-engine, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is the production of a safe, simple, and cheap road-locomotive light in weight, easy to control, and possessed of sufficient power to overcome any ordinary inclination.

The difficulties heretofore encountered in the application of steam to common roads are the great weight of the boiler, engine, water, and water-tanks, the complicated apparatus necessary to adapt the machine to the roughness of the roads which it must traverse, the necessity of the attendance of a skilled engineer to prevent accidents, and the unsightly appearance of the locomotives built on this plan. I have succeeded in overcoming these difficulties by the construction of a road-locomotive propelled by a liquid-hydrocarbon engine of the compression type, of a design which permits it to be operated in connection with the running-gear, so that the full carrying capacity of the body of the vehicle can be utilized for the transport of persons or goods, and which, by dispensing with skilled attendance and with steam-boilers, water, water-tanks, coal, and coal-bunkers, very largely reduces the weight of the machine in proportion to the power produced and enables me, while employing the most condensed form of fuel, to produce a power road-wagon which differs but little in appearance from and is not materially heavier than the carriages in common use, is capable of being managed by persons of ordinary skill at a minimum of trouble and expense, and which possesses sufficient power to overcome any usual inclination.

My improved road-engine is represented in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a front elevation. Fig. 3 is a vertical section through my improved hydrocarbon-gas engine. Fig. 4 is a vertical section through the flexible valve connections. Fig. 5 represents the slotted plate for operating the clutch or clutches.

A A, Fig. 1, is the body of my im-

proved road-locomotive, which may be of any ordinary or desired form, with any number of seats and with or without a top.

B B are the driving-wheels, which are of any usual construction, and C the trailing wheels.

D and E are respectively the springs of the two pairs of wheels.

F is the fifth-wheel, to which the springs D are connected.

G is the steering device, and H the hand-wheel for operating the same. Z is a brake, which is controlled by a cord running forward to the foot-lever T.

The liquid-hydrocarbon-gas engine L may be connected with either the steering or trailing wheels; but I prefer to drive the steering wheels in vehicles of the type represented in the accompanying drawings. The most convenient way of arranging the cylinders of the liquid-hydrocarbon engine is transversely to the driving-shaft, as shown in the drawings. The gas-engine is provided with a power-shaft carrying a pinion N, meshing into the gear M, fixed to the driving-axle. By attaching the cylinders, which may be of any convenient number, to the air-reservoir O, Figs. 2 and 3, which is a shell closed at each end and arranged parallel to the driving-shaft, a compact arrangement is obtained. If the driving-shaft passes through the air-reservoir, it should pass through a tube secured to the heads at each end in order to avoid stuffing-boxes. Journals for the driving-shaft may be formed on the heads of the air-reservoir, or where the shaft is located outside of the reservoir, as in Fig. 3, the gas-engine is connected with the shaft by suitable boxes. The springs D are attached at their lower side to the air-reservoir or to a frame connecting the journals on the driving-shaft and the engine. In the construction shown in Figs. 1 and 2 a portion of the upper side of the air-reservoir is removed and the cylinders of the gas-engine are cast in one piece with a curved flange which is riveted over the top of the air-reservoir. On their upper sides the springs D are connected with a frame P, which is fastened to the worm-gear constituting the fifth-wheel F.

Any form of liquid-hydrocarbon engine of the compression type may be employed in my improved road-locomotive.

In the accompanying drawings I have represented an engine of the type in which air is compressed into a reservoir O by an airpump d, Fig. 3, from which it is admitted to the working cylinder R by a valve f, operated by a cam-shaft S, along with a given quantity of a liquid hydrocarbon injected by pump g from the tank U into the combustion chamber T', the products of combustion, after ex-

pansion, being exhausted through valve V, opened by the cam-shaft S.

Fig. 3 is a central vertical section of the working cylinder and air-pump, and in which for convenience of illustration the combustion-chamber, air-valve, pump, and exhaust-valve are represented in the same plane. It will be understood that in the three-cylindere engine shown each working cylinder is provided with suitable admission-valves and combustion apparatus and that the cranks are preferably arranged at equal angles with each other.

As the general construction and mode of operation of liquid-hydrocarbon engines of this class are now well known, it is considered unnecessary to further describe them here. The inlet-valve J' of the air-pump is provided with a dust-strainer composed of fine wire-gauze, cloth, or other material for preventing the entry of dust into the apparatus, and a bend in the entry-pipe may be filled with a liquid either with or without an absorbent material to further purify the entering air from floating particles.

X is the exhaust-pipe through which the products of combustion are discharged underneath the body.

The cam-shaft S is driven by the gear M on the axle of the driving-wheels. The gears should all be boxed in to exclude dust. A clutch Y, Fig. 2, may be interposed between the engine and the gearing M N to disconnect it from the same, in which case the cam-shaft S should be driven positively from the engine-shaft.

The traction-wheels B are attached to the axle by clutches j j', Fig. 2, splined on the driving-shaft and held in mesh by springs in order to permit of the wheels rotating independently of each other to facilitate progress over rough roads and the turning of corners. These clutches may also be used for the purpose of disconnecting the engine from the traction-wheels. This is accomplished by connecting the clutches with the rotating plate m by means of the rods i i', Fig. 2. The plate m is rotated from one of the hand-wheels I by the flexible connection J. An enlarged view of plate m is given in Fig. 5. It contains two spiral slots, into which the ends of the rods i i' project, so that when the plate is turned in one direction or the other the rods i i' will be drawn inward or thrust outward, thereby operating the traction-wheels. Friction or ball clutches may be used for this purpose. In order to operate the clutches and the necessary valves of the engine, I employ flexible connections, as shown in Figs. 1 and 2 and enlarged in the sectional view, Fig. 4. The connections J between the hand-wheels I, placed conveniently under the control of the engine-driver, and the clutch or

clutches and valve consist of tubes arranged one within the other, as many as may be necessary, and supported by suit-

body of the carriage with reference to the driving-axle by having each rod or tube composed of two parts capable of sliding

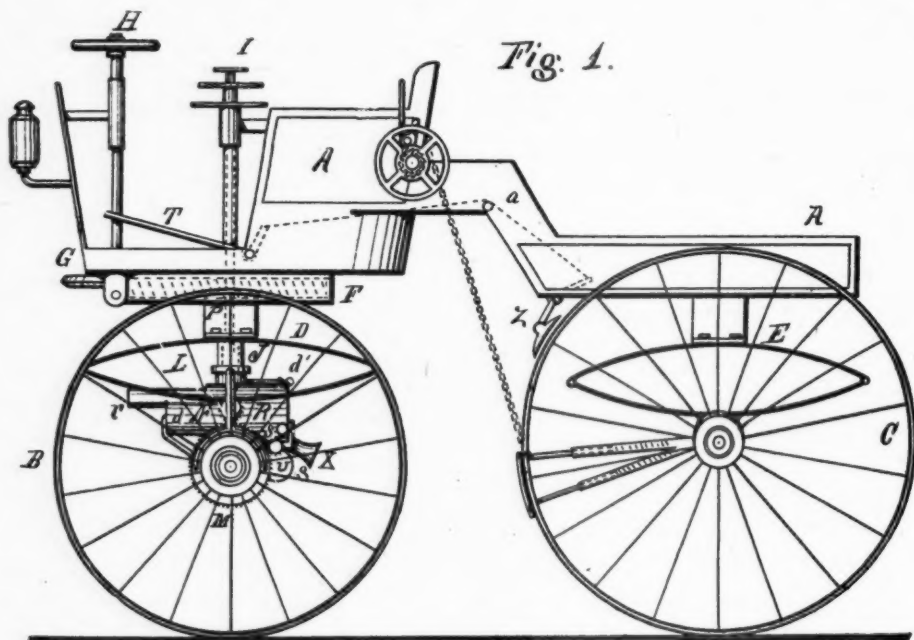


Fig. 1.

Fig. 4.

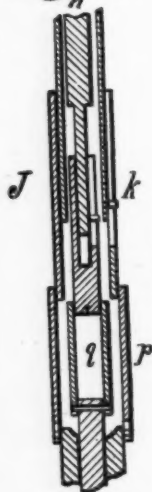


Fig. 2.

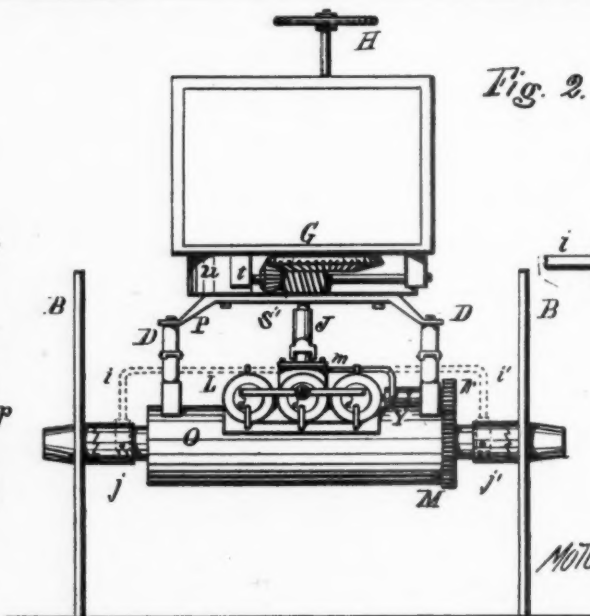


Fig. 5.



able bearings on the body of the road-engine. The inner connection may be a rod n, as shown in Fig. 4. Provision is made for the vertical oscillation of the

on each other, but compelled to rotate together by a spline or pin k in the one fitted into a slot in the other. At their lower ends the connections pass into a

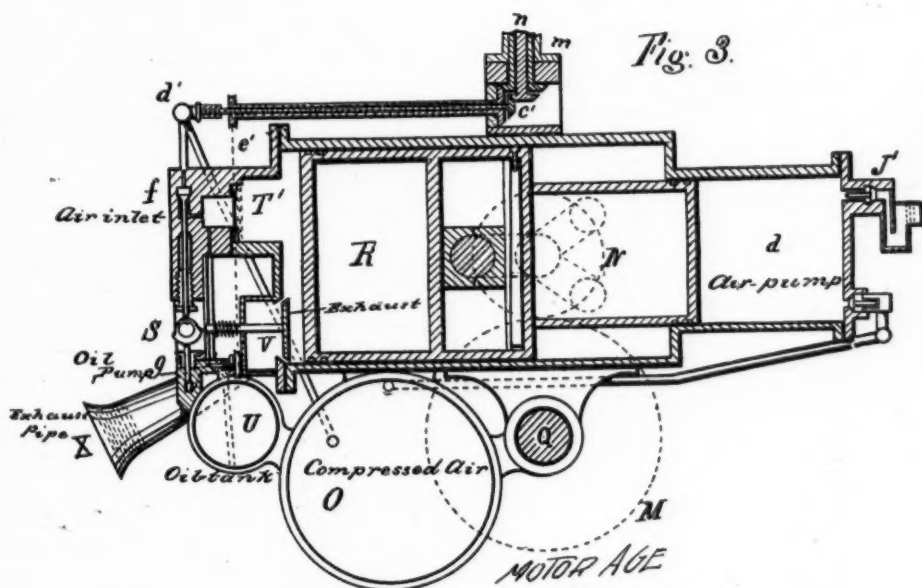
MOTOR AGE

suitable journal on the gas-engine. Above this journal each connection is provided with a universal joint p q, Fig. 4, which admits of the oscillation of the driving-shaft with reference to the body of the carriage, the sections of the universal couplings being long enough to admit of this motion in any direction. Each of the universal couplings is made enough larger than the one it incloses to allow of the rotation of the one without turning the other. The pins or lugs by which the couplings are connected together should fit in slotted holes to permit freedom of motion. Flexible shafts made of

of turning thereon. In Figs. 1 and 2 it is represented as entirely boxed in by a dust-shield u. The fifth-wheel has a worm-gear cut on the periphery thereof, meshing with the worm S', Fig. 2, on a shaft which is attached to the body of the carriage by suitable boxes. The worm is rotated from the steering-wheel H by means of the gear G and pinion t.

The wheels of my improved hydrocarbon road-engine may be provided with any suitable traction device for overcoming the resistance of rough or slippery roads or those of unusual inclination.

Provision is made for backing my



spiral wire coils in suitable coverings may be used instead of the universal connections herein described. The valves of the engine are connected with the lower ends of the flexible connections, so as to be operated therefrom in any convenient manner. The air-inlet valve d', Fig. 3, is controlled from the upper hand-wheel I by the innermost flexible connection, communicating at its lower end by gears c' with an extension-rod splined to the valve-stem. The inlet-supply valves between the tank U and the pump g are controlled by the flexible connections and the cord e', Fig. 3. The flexible connections are located in the center of the fifth-wheel F, so as to allow of the free action of the steering apparatus.

The fifth-wheel F is attached to the body of the carriage so as to be capable

improved road-engine by reversing the motion of the driving-wheels by a set of reversing-gears interposed between the pinion N and the gear M, the said gears being arranged to be brought into or thrown out of action by one of the flexible connections already described. A suitable arrangement of reversing-gears applicable to this purpose is found in the system of gearing used to reverse the motion of the feed-screw in engine-lathes; but I prefer to make the body of my road-engine with a crane-neck, so that the driving-wheel may be turned completely around underneath the driver's seat whenever it becomes necessary to propel the carriage backward.

The central space between the working cylinders and the air-pumps in which the cranks revolve (into which access is had

through suitable hand-holes) may be used as a cooling-chamber by the introduction of a small quantity of water within it, either with or without an absorbent material, provision being made for the escape of any vapor by an outlet either directly into the atmosphere or into the exhaust-pipe from the engine.

It will be observed that my improved hydrocarbon-engine can be applied to a large proportion of the carriages in common use. It may also be applied in various other relations with the propelling mechanism different from those herein described or represented without interfering with or preventing the ordinary uses of a carriage-body. It may also be applied to carriages having perch connections between the axles of the two pairs of wheels.

In Fig. 1 I have represented a brake-shoe attached to the rear axle and arranged to be dropped into position between the wheel and the ground. It is operated by means of a chain of the proper length, attached to the body of the carriage and provided with a hand-wheel, spring-pawl, and ratchet.

As it would be decidedly inconvenient to be under the necessity of extinguishing the flame in my improved traction-engine whenever it was required to make a short stop, the clutch Y (or the clutches jj') is interposed between the engine and the driving wheels, so as to admit of the running of the engine while the carriage remains stationary.

I am aware that steam-carriages for use on common roads have been heretofore constructed on many different plans; but I am not aware that previous to the date of my invention any attempt was made to reduce the weight of a road-locomotive by the production of a compression liquid-hydrocarbon engine capable of locomotion, or that there was described or constructed a compression hydrocarbon-engine of such a design that it was capable of propelling a road-locomotive, more especially when the engine was so designed as to leave the body or platform of the carriage practically unobstructed for the conveyance of passengers or freight, except by the handles or wheels necessary for the guiding or controlling of the vehicle and the regulation of the engine.

I am also aware that it has been heretofore proposed to use liquid fuel in the furnaces of steam road-carriages for the purpose of generating steam for propelling the same—as shown, for instance, in English Patent No. 1,538 of 1863—and such arrangement, which does not remove any of the objections hereinbefore mentioned, I hereby especially disclaim.

I do not claim herein anything shown or described in the following English patents: No. 8,207 of 1839, No. 6,052 of

1830, No. 2,737 of 1871, No. 6,955 of 1835, and No. 780 of 1865.

I am also aware that it was suggested in English provisional specification No. 10 of 1878, that petroleum or other like motors "might be used to provide motive power" for tram-cars and other self-propelling vehicles.

I claim—

1. The combination with a road-locomotive, provided with suitable running gear including a propelling wheel and steering mechanism, of a liquid hydrocarbon gas-engine of the compression type, comprising one or more power cylinders, a suitable liquid-fuel receptacle, a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device and a suitable carriage body adapted to the conveyance of persons or goods, substantially as described.

2. The combination with a road-locomotive, provided with suitable running gear including a propelling wheel and steering mechanism, of a liquid hydrocarbon gas-engine of the compression type, comprising one or more power cylinders, a suitable liquid-fuel receptacle, a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device, and a suitable carriage body located above the engine, substantially as described.

3. The combination with a road-locomotive provided with suitable running gear including a propelling wheel and steering mechanism, of a liquid hydrocarbon gas-engine of the compression type comprising one or more power cylinders, a suitable liquid-fuel receptacle, a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device, a suitable carriage body located above the engine and a flexible or jointed connection between the engine and the body, substantially as described.

4. The combination with a road-locomotive, provided with suitable steering mechanisms, of a hydrocarbon engine applied to the driving axle and having flexible valve or clutch connections located within the steering mechanism, substantially as described.

5. The combination with a road-locomotive provided with a propelling wheel, of a liquid hydrocarbon gas-engine of the compression type, comprising two or more working cylinders and pistons arranged to act in succession during the rotation of the power shaft, a suitable liquid-fuel receptacle, suitable devices for transmitting motion from the power shaft to the driving axle, and a clutch or disconnecting device, substantially as described.

6. The combination with a road-loco-

motive, provided with a propelling wheel, a liquid hydrocarbon gas-engine of the compression type, comprising one or more unjacketed working cylinders communicating with a closed crank chamber, adapted to hold a cooling liquid, and a

power-shaft geared to run faster than the propelling wheel substantially as described.

GEORGE B. SELDEN.

Witnesses:

CHARLES E. RIDER.

HENRY H. SCHLEBER.

WEEKLY PATENT OFFICE BUDGET

HEATH'S ELECTRIC STEERING DEVICE

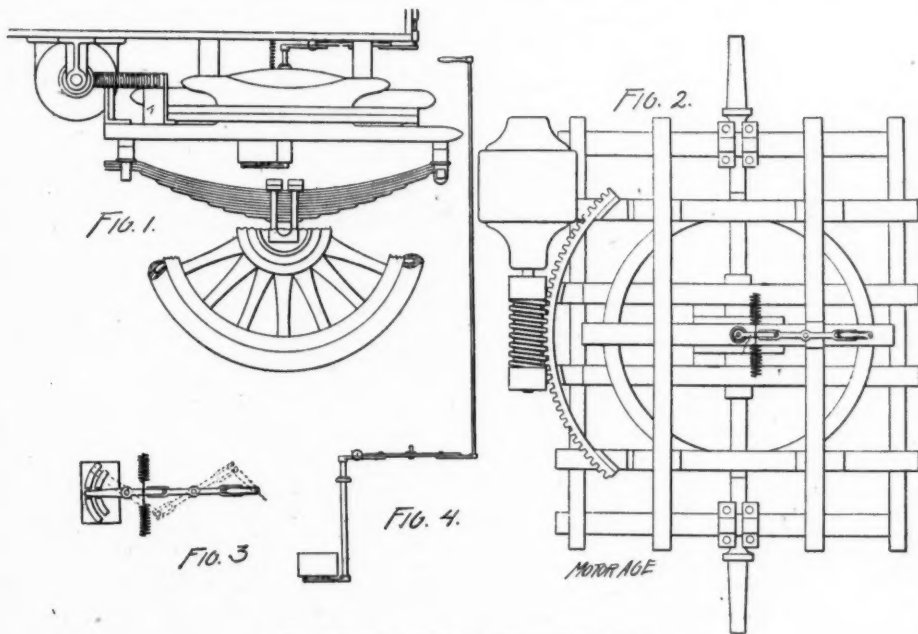
Letters Patent No. 650,840, to Harry E. Heath, Windsor, Conn., assignor to the Eddy Electric Mfg. Co., same place; electric steering mechanism for heavy vehicles.

The assignee of this patent is a well known company which makes electrical machinery and appliances, prominent among which are motors and running gears for electromobiles. The patent itself is one of the most ingenious and practical of any motor-vehicle patent that has come through the patent office in some time.

In Mr. Heath's device, which is in-

tended for heavy vehicles, the power for steering comes from a motor, independent of the motor or motors for driving the vehicle. It is so arranged that it will give the vehicle a greater or lesser turn, according to the movement that the driver may give the controller, and will then automatically cease giving the directing wheels any further angle. No greater power is required to steer the vehicle when it is heavily loaded than when light.

In accomplishing these results, the inventor sets the steering wheels on a one-piece axle, supporting a turn-table, as shown in Figs. 1 and 2. On the rear portion of this turn table is a segmental

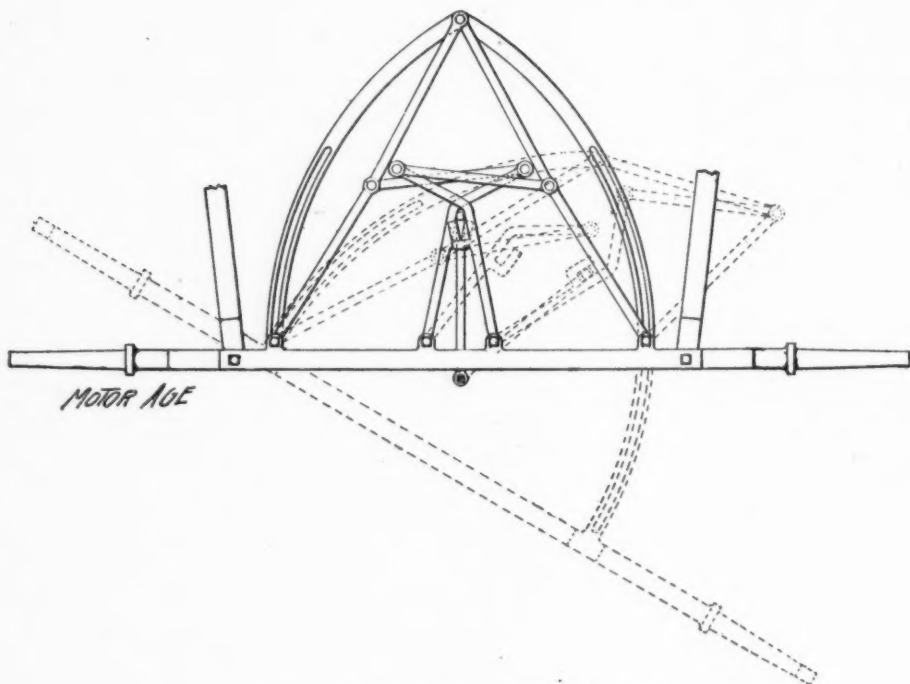


HEATH'S ELECTRIC STEERING DEVICE.

rack, meshing with a worm-gear. This worm-gear is actuated by a small motor, this motor being normally at rest. Supported on the turn-table are the terminals of the controller, the contact-arm of which is carried by the body of the vehicle, oscillating about a point coincident with the king-bolt. This contact-arm is held, normally, out of contact by springs, as shown in the heavy lines in Fig. 3, but when the lever, shown in Fig.

broken and no further angle is given to the steering wheels. The amount of the angle assumed will depend on the point to which the contact-arm is moved on the terminals, governed by the movement of the lever at the hand of the driver.

A movement of the lever governing the contact-arm to a central position will result in the turn-table and wheels being turned until they assume a normal



HEATH'S SELF RIGHTING STEERING DEVICE.

4, is moved, the contact-arm assumes the position shown in the dotted lines in Fig 3, or any other desired position.

When placed in this position, current is admitted to the motor to make the armature move in one direction or the other, as may be desired, and the worm-gear is revolved accordingly and begins to move the turn-table, and, with it, the steering wheels. But, as the terminals of the controller must move with the turn-table, and the contact-arm remains stationary in reference to the body of the vehicle, the terminals move away from the contact arm, the current is

position and the vehicle is again moved in a direct line.

Four comparatively strong claims are allowed.

ANOTHER OF HEATH'S DEVICES

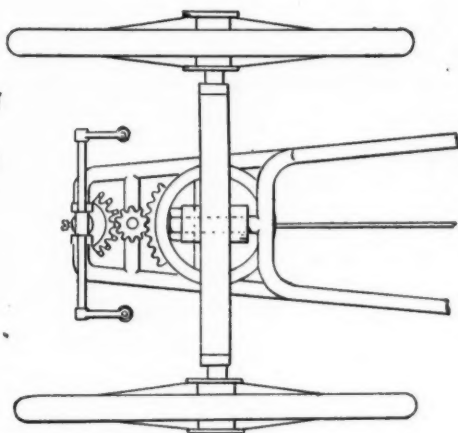
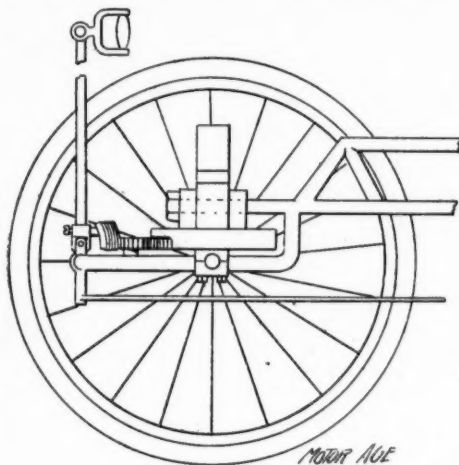
Letters Patent No. 650,838, to Harry E. Heath, Windsor, Conn., assignor to the Eddy Electric Mfg. Co., same place; steering device for automobiles.

This second device of Mr. Heath's is very ingenious but scarcely as practical as the preceding one. The object of it is to provide a mechanism which will

tend, when the vehicle is turned, to make it resume a forward direction.

A one-piece axle is used, having two points of oscillation. The outer wheel moves ahead of its normal position and the inner one behind. The distance be-

time, most meritorious part of the vehicle is the steering mechanism, shown in the accompanying illustration, in which the stub-axles are crank-shaped, in order that when the vehicle is turned from a straight line, it will tend



DOOLEY'S STEERING MECHANISM.

tween the forward wheel and the point of oscillation is greater than the distance between the rear wheel and that point. Therefore the greater leverage on the forward wheel will tend to make the axle assume its normal position. Such a device looks well on paper but would be very difficult of practical construction. Nine claims are allowed.

RAVENEZ' STEERING DEVICE

Letters Patent No. 650,950, to Louis Woldemar Ravenez, Paris, France, assignor to the Societe Nouvelle des Estab-

to return to such straight line.

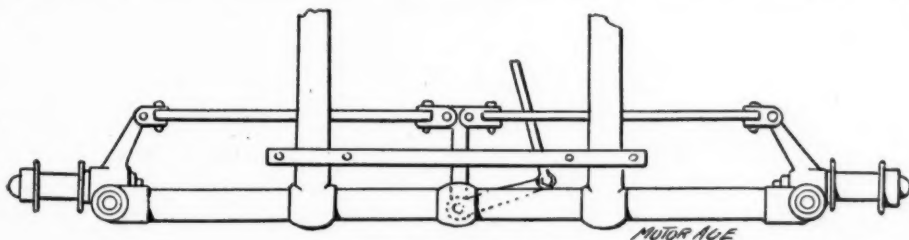
The other mechanism shown in the five sheets of drawings is too complicated to conflict with American ideas of construction.

Seven claims are allowed.

DOOLEY'S STEERING MECHANISM

Letters Patent No. 651,323, to Thomas B. Dooley, Malden, Mass., assignor to Everett D. Wiggin, trustee, Boston, Mass.

This patent is a queer combination of both clever and irrational devices. Mr.



RAVENEZ' STEERING DEVICE.

lisements Decauville Aine, same place.

The patent attempts to cover a complicated motor-vehicle and does it very poorly. The simplest, and, at the same

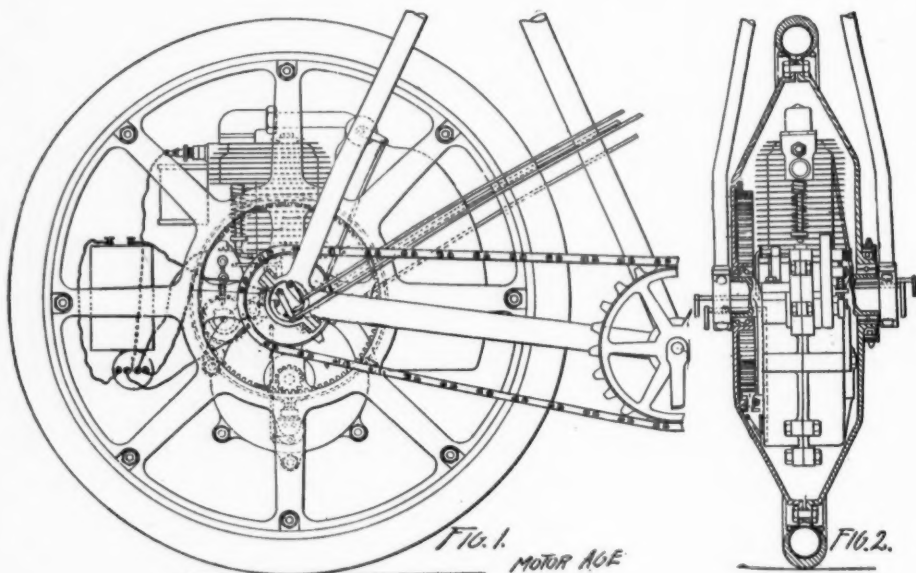
Dooley was evidently imbued with the idea that, in managing a motor-vehicle, it is desirable to do it as if one were driving a horse. With that evident aim

in view, he makes his controlling lever with two handles. A pull on the right hand one will steer the vehicle to the right, and a pull on the left hand one, to the left. A straight backward pull on both will apply the brake.

In accomplishing these objects he uses a one-piece axle and a toothed fifth wheel. Meshing with the teeth of this fifth wheel is a spherosegmental toothed gear—spherosegmental so that the backward pull on the handles will not throw

Mr. Perks has displayed much ingenuity in figuring out this device, which is intended, primarily, as a self-propelling rear wheel to be substituted for the ordinary rear wheel of a bicycle.

In his construction he has made the wheel wide and of the form shown in the two accompanying figures. The interrupted axle of the motor wheel is made hollow, so as to admit of its supporting the gasoline motor, carbureter, fuel tank and ignition device, and to allow



PERKS' MOTOR WHEEL.

it out of mesh with the teeth on the fifth wheel. The lower part of the steering lever is prolonged below its journal and attached to a brake rod. Thus when the backward pull is given to the controlling lever the brake rod will be tightened and the brake applied.

Whoa, Dobbin!

In constructing his clutch mechanism for changing the speed of the vehicle, an ingenious spring arrangement is used, to prevent too sudden a jar.

Seven claims are allowed.

PERKS' MOTOR WHEEL

Letters Patent No. 650,906, to Edwin Perks, Coventry, England; motor wheel for motorcycles.

of the various controlling levers being introduced. The motor-shaft is provided with a pinion which meshes with an internally toothed flange on the driving wheel. The ignition device and exhaust valve are actuated by a second pinion, meshing with the toothed flange and having twice as many teeth as the pinion on the motor shaft. Provision is made for taking the wheel apart to examine the motor.

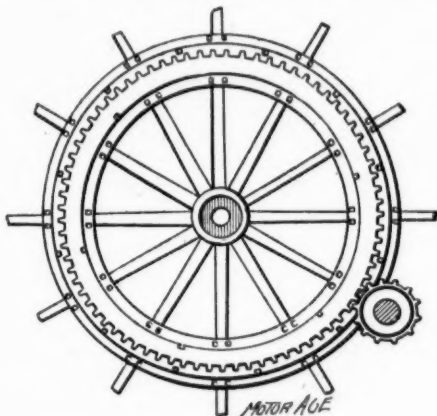
Ten claims cover the particular constructions adopted.

BELCHER'S CONVERTING DEVICE

Letters Patent No. 650,816, to Cassius E. Belcher, Linden, Pa., assignor of one-half to J. H. Bowers, Jersey Shore, Pa.;

device for converting ordinary vehicles into automobiles.

The patent covers strongly the application of an annular toothed flange to



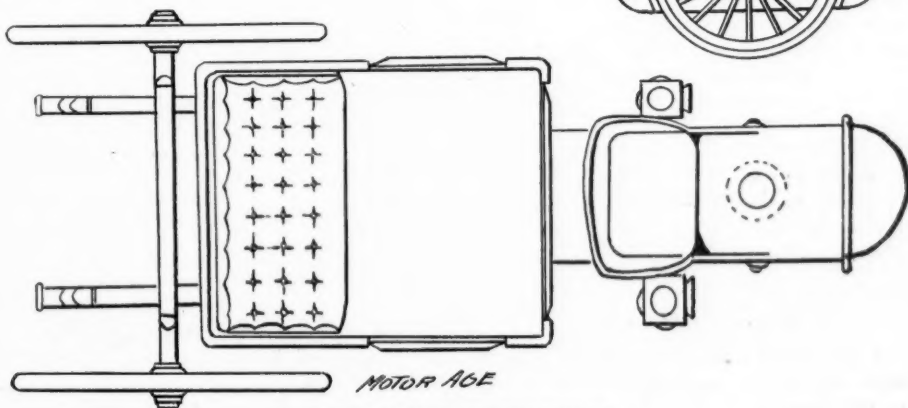
Belcher's Converting Flange.

the wheel of an ordinary vehicle for the purpose of converting it into an automobile. The ring is bolted to the spokes of an ordinary vehicle wheel and the power may be produced in any manner. The patentee appears to have covered this device strongly, but it is doubtful if any converting device will have any value.

Two claims are allowed.

BUFFINGTON'S FORECARRIAGE

Letters Patent No. 650,893, to Leroy S. Buffington, Minneapolis, Minn.; a forecarriage to convert ordinary vehicles into automobiles.



BUFFINGTON'S FORECARRIAGE.

The inventor provided a fifth wheel in which is carried a forecarriage with batteries, motors, etc., the whole encased. The accompanying illustration shows the construction clearly enough to make a further description unnecessary.

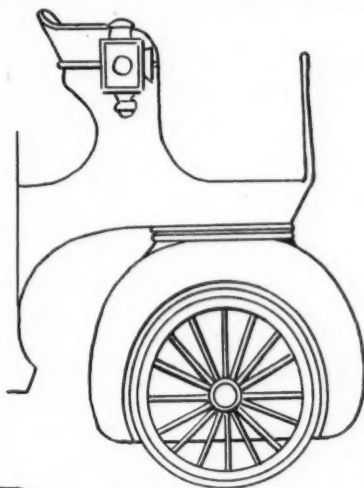
No less than eight claims are allowed covering this peculiar construction strongly.

LIBBEY'S WILD CONTRAPTION

Letters Patent No. 650,847, to Hosea W. Libbey, Boston, Mass.; compressed-air motor-vehicle.

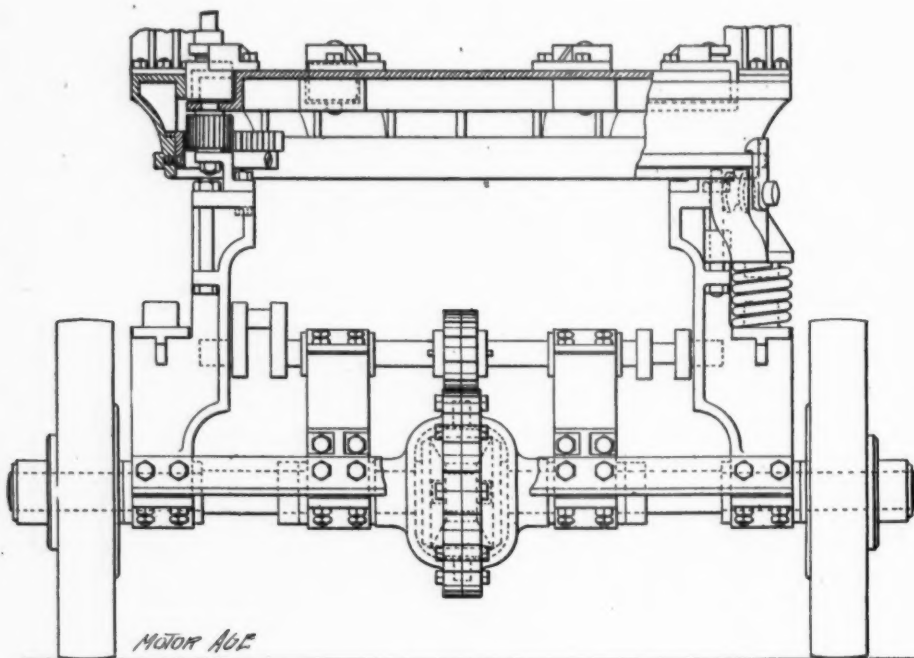
This so-called invention reminds one of one of the early steam carriages in which the propelling power was obtained by producing steam and allowing it to escape through a pipe in the rear of the vehicle, the contact with the open air producing all the power.

Mr. Libbey arranges "buckets" on the driving wheels of his vehicle and the



force of compressed air acting on these buckets is supposed to revolve the wheels and propel the vehicle. He need not have gotten a patent, for no one

idea of how the power shaft and transmission and differential gears are constructed. Any sort of motor may be used. The fifth wheel is provided with



MOLAS' TRACTOR DEVICE.

would be foolish enough to copy the device.

MOLAS' TRACTOR DEVICE

Letters Patent No. 651,197, to Jean Molas, London, England; automobile tractor.

This patent covers a tractor designed to be attached to an omnibus or other vehicle to convert it into an automobile. Consequently the entire power mechanism, transmission gear and differential gear are carried by two wheels which also support a fifth wheel to carry the body of the vehicle. An inspection of the drawing annexed will give a good

a toothed flange with which meshes a pinion operated by a hand wheel, not shown, to effect the steering.

Two claims are allowed, covering only the specific construction shown.

HOW TO SAVE MONEY

Many a man has wasted time and money in perfecting devices that have already been perfected, only to learn, when applying for a patent, that he has been anticipated. This can be avoided, as far as motor-vehicles are concerned, by having a copy of Allen's Digest of Automobile Patents. See display advertisement on another page.

FROM THE FOUR WINDS

TWO EXPOSITIONS NEXT YEAR

From all indications there will be two expositions in this country in 1901 worthy of note, namely, that of Buffalo, known as the Pan-American, and one in South Carolina, which will go under the name of the Inter-State and West Indian. Congress has made a liberal appropriation for the first named, and a bill is now pending to appropriate \$250,000 for the use and benefit of the latter one. This proposed exposition will be held at Charleston, S. C., beginning December 1, 1901, and terminating May 1, 1902. It was originally projected to display the manufactures and industries of South Carolina, but so much interest was evinced in the affair by the citizens of other states that it has been found necessary to enlarge its plan and scope, and it is now contemplated that every state and territory in the Union will have a place either among the collective exhibits or in the group of state buildings. It is proposed to make a special feature of the automobile exhibit and to this end a large space in the transportation section will be allotted to manufacturers of horseless vehicles. That automobile manufacturers will be well represented there is little doubt, and by so doing they will ultimately participate more fully in the large and growing trade of the southern states.

SPLIT IN THE FRENCH CLUB

The split in the Automobile Club of France, has created a great sensation in Paris. The cause of the split was found, as already recorded in these columns, in the fact that the club had degenerated, since its recent move into palatial quarters, into a mere aristocratic social organization. One of the two features that caused the greatest dissatisfaction was the failure of the club—supposed, hitherto, to be the guardian angel of the sport, pastime and industry of automobilism in France—to take any action when

the "war against automobiles" was instituted by the French authorities. The second cause of complaint was the appropriation of only 5,000 francs (\$1,000) for races and competitive tests, out of a total appropriation of 361,000 francs (\$72,000)—and this is in a club primarily established to foster the industry.

The feeling of the secessionists is voiced by Pierre Giffard, the editor of *Le Velo*, in a leader in that publication, as follows:

"Those who complained that there was never any excitement at the Automobile Club, were yesterday treated beyond their fondest hopes. The annual general meeting furnished all the elements of a tempestuous gathering, during which there was not a moment in which the interest lagged.

"How times have changed! How far are we now from the four previous meetings, where there were only about 150 present, all quiet and gaping at the president while he made his report and voting unanimously for all the projects recommended by the executive.

"Yesterday about 400 were at the assembly. The meeting was interrupted by scores of noisy incidents, bitter controversies, obstinate objections, with numerous questions and calls for the ayes and noes.

"To resume, after an hour and a half of noise, the executive, having, with the greatest difficulty, secured piecemeal, the approval of their various plans—at a cost of what great work and how much oratory—all retired thoroughly disgusted, the secession was accomplished and the meeting at an end.

"It would be useless to inquire into the causes of this sentiment. To consider results, is all that remains of value. Now, several members of the Automobile Club committees—from today, ex-members—have arrived at a determination that will be well received by all the workers of the first hour, by all those who have conceived—and I am of those—an associa-

tion for aggression and for defense, based upon a profound affection for the new means of locomotion, as opposed to this gathering of aristocracy which is opposed to the principles of democracy, by which we swear—the motor for all.

"There were two conflicting currents of opinion from the day we entered the Hotel Pastoret (the new home of the club). They could not do otherwise than separate. It was done.

"We do not ask the death of the Automobile Club, but that it may recover its equilibrium, and, with its international noblesse, make itself the benefit to the industry that it should—with faith, none too great, that it will.

"But we have the right to create something different, less expensive, more practical and more up-to-date. That is what we are doing, from today on. What am I saying? From yesterday the work was begun.

"To the Automobile club, which has become exclusively a social club, where one does not gamble, but where, however, one does not find the means to encourage the automobile—the provision is 5,000 francs for races and competitions out of a budget of 361,000 francs!!!—we oppose the Moto Club de France, where there will be found all the workers of the first hour of whom we spoke in the foregoing and where snobbishness will have no place, for it has no service save to mask emptiness of head and heart.

"All we workers, all interested in the cause which we defend—and for the future it will be defended—we will direct our efforts in channels, which, although talked about, has never been done, except when public opinion forced action.

"We do not cherish any resentment against the organization which we helped to form in 1895. We only think that something better should be done now and we approve the kind remarks of Compté Recope, member of the executive committee of the Automobile Club de France, who said at the end of the general meeting, 'What is the use of all this noise? Let those who are not satisfied, leave!'

"Go your way, Compté, we go ours."

The newly organized club will be known as the Moto Club de France and

will be a fostering organization for the development of the industry. It will be run on lines radically different from the old club as will be seen by the following points which have been decided upon:

First, the club will have no club rooms—to avoid the French tax on social organizations—and its quarters will be confined to offices where the encouragement of the automobile industry will be the main feature.

Second, the affairs of the club will be managed by an executive committee, at the head of which will be the president, vice-president and treasurer, elected by the committee. One-fifth of this committee will be elected annually and the officers will be ineligible for re-election, consecutively.

Third, the secretary will be a paid official who will devote his whole time to the affairs of the club.

Fourth, the membership fees and dues will be fifty francs for resident members and twenty for non-resident members.

Fifth, the object of the club will be the encouragement of the industry, the protection of the rights of the users of vehicles, the establishing of a press bureau and the maintenance of a museum for the permanent exhibition of novelties and improvements in automobiles.

A PECULIAR ACCIDENT

Philadelphia, June 11.—Racing with a trolley car was the probable cause of what may turn out to be a fatal accident to one of the Quaker City's prominent automobilists, William Poth, a son of the famous local brewer. Yesterday afternoon Mr. Poth and a friend left the city for the country seat of the former's father, at Jeffersonville. Above West Conshohocken the wagon road, a trolley line and the Reading Railway parallel each other, the latter in the thirty-foot cut, the three roads being separated from each other by but a few feet. As the automobilists were bowling along a trolley car hove in sight behind, and it is supposed Mr. Poth let out a few links in an effort to keep ahead. Just before the car reached the auto the latter began to wobble and suddenly turning to the right mounted the fifteen-inch rise to the

level of the trolley track, throwing its two occupants on the track between the rails. Mr. Poth landed on his head and received a fracture of the skull. He has been unconscious since the accident. His companion miraculously escaped with a few scratches. The auto, after shaking out its occupants, made a bee line for the flimsy fence which separated the trolley line from the railway tracks, went through it like a ten-inch shell, and plunged down the embankment directly in front of an approaching freight train. It cleared the track and fell on

its side, the train taking off the top as clean as a whistle. Despite the shock to its anatomy, the auto's machinery continued whizzing away merrily, and nobody cared to approach the vehicle until Mr. Poth's companion, having partially recovered from the shock of the accident, shut off steam.

The peculiar feature of the affair is that despite the sudden jolt over a fifteen-inch obstruction and the thirty-foot plunge down an almost perpendicular bank, the vehicle proper is practically uninjured.

CRITIC AND DESIGN

Two castings may occupy similar positions in a structure, except in one respect. One casting is subject to a sudden shock, the other is not. The engineer makes them very different in shape although of the same overall dimensions. A friend comes and looks at them and says that one looks well and one looks ill. The engineer argues that if one looks well because it is rightly designed, the other must also look well, for it is designed in exactly the same way, the only difference being rightly a difference, says the *Automotor Journal*.

How are we to judge between them? One of the best ways of avoiding the difficulty is to deliver a judgment which is a kind of converse of the famous judgment of Solomon. Instead of halving the responsibility we say to the critic: "Make that casting as you think right and then risk your life on its being a safe part of the structure." To the designer we say: "Keep specimens and drawings of all your work, which you say must look right because it is right, and let them be judged by the light of further knowledge as to their rightness."

The public should take up this attitude towards the motor-car builder and his many candid friends. Corner the candid friends and make them say what they would do. Could they make handsome and odorless motor cars if they were fit-

ters and coach-builders? If not, would they make them at all? If they would not, do they altogether object to others doing so, and trying experiments and making improvements? They are not altogether unreasonable, they will let us try.

Let us, on the other hand, say to the motor-car builder: "You can supply a want; you are going to do so. Your vehicle runs more or less in one plane, not much out of one line; it cannot be the least like a wood pigeon riding on the wind. But wood pigeons do not carry luggage or passengers." The motor-car builder sees that he has a definite thing to aim at, and his critics must remember that, as men reckon beauty, the dusty, bleeding feet of him that bringeth good tidings are "beautiful upon the mountains."

That is one step. Next, if gradually we find out how to put each part of the motor and vehicle in its right place, we are getting on further towards both use and good looks. This does not preclude the exercise of our discretion in covering up the working parts, making the covering as little obvious as possible. Locomotives in the United States seem to haul trains about as well as those in Great Britain, but the latter look very much better. This difference in appearance seems to be largely due to careful placing

of parts out of sight in English locomotives, without obvious special arrangements for this purpose.

Applied ornamentation also has its proper uses. Each element of the ornamentation should doubtless express some idea, but a very good general effect may be produced by a merely selective process; as one decks a table with flowers. The ornamentation must not interfere with the essential parts of the vehicle, the parts that supply the want.

If, however, no ornamentation can be got to look well, if the vehicle always remains clumsy and ugly, it is likely that the main design is proceeding along the wrong lines. The system is not really suited to the job.

It is absurd to expect really good-looking motor cars of all classes to be produced as soon as the class is decided upon; power must not be sacrificed, nor must lightness, strength, or even durability. Ultimately they can be combined, at first one or another will preponderate, and we must not be surprised if the general appearance is not very elegant. By putting some part of the machinery in a conspicuous place where it looks very ugly we may find out how to place three or four other parts. The holly bush which acts as a "nurse" to a forest tree is not fulfilling its original idea of growth when it succumbs gradually under the shade of the tree which it has protected. So parts of our machine, once deemed useful in themselves, may lead us on to a stronger, better substitute if our design be not hampered by undue anxiety to get everything right at once.

Some critics there are who say that the automobile should be evolved without any reference to horse-drawn vehicles. That is to say that, when we have solved our problem on level asphalt, we are to throw away centuries of experience with wheels on roads.

It is easy to tell designers to work independently, easy to refer scornfully to the poor, weak men who made the first railway coaches like road coaches, easy to be wise after the event; but it is far from easy really to design *de novo*. It is one thing to teach the French language to a Russian noble who has his analogies and ideas ready and is eager to speak

them; but quite another thing to try and teach it to an English peasant who has no analogies ready for it and does not want to speak at all.

If we had really had no experience to go upon, we might even now be trying double cars with a motor driving a pinion in each and a long rack between the two; first the front car with wheels locked, and both cars pulling towards the middle of the rack; then the hind car with wheels locked, and both cars working out at the ends of the rack. Caterpillars walk so. How should we know that we were to roll like porpoises instead of walking like caterpillars, unless by experience?

A knowledge of first principles is essential to a right understanding of how to differ from things which are like without being the same. A knowledge of the natures of the various substances we are using is essential to the use of those materials in the right proportions, and the right shapes. But, in this as in other matters, the indefinite something which we call "judgment" and its ally "good taste" have ample scope in adjusting proportions of the body, in putting in the right material for cushions, and in using the right colors if and when these points have not been thought out as part of the general design.

But when anything which is done under this head interferes with the proper purpose of the vehicle, let us cut them off and cast them from us, getting to the goal somehow, maimed or blind it may be, but, once there, the main design worked out to its logical conclusion, the virtue of the right design will produce a thing of beauty.

The world is full of analogies and of examples.

It is an ungainly barbarian who stands today before the emperor to pay him homage, to borrow his knowledge, his clothes, his food, his arms. But in the days to come the new things shall be greater than the old, the barbarian's descendants shall be a stronger force in an empire of created strength, in which the old families live on and mix with the new, the charm and dignity of things traditional respected, even preserved, by the life and force of things that grow and change.

NEWS OF THE MOTOR INDUSTRY

NEW YORK AUTOMOBILE SHOW

New York, June 11.—Floor plans and invitations for applications for spaces were sent out on June 1 for the show of the Automobile Club of America, at Madison Square Garden, November 3 to 10, under the management of Frank W. Sanger.

The center oval, containing some ten thousand square feet, will be surrounded by a broad dirt track, twenty feet wide, and will be reached by a bridge from the Madison Avenue entrance. The main aisle will be ten feet wide and the two parallel aisles seven feet. In addition to the ground floor space the north gallery on the Twenty-seventh Street side will be floored so as to give booths for some twenty exhibits. Spaces on the main aisle will rent for \$1.25 per square foot and in the side aisles for \$1.00 a foot. Already over 6,000 square feet of space has been included in the applications received. The spaces will be allotted on June 18th, preference being given to exhibits of established reputation. In case of disputes as to space, they will be referred to the club committee.

The boxes surrounding the track will be uncovered and for use; for the show is intended to be as great a social function as the horse show. On the track will be the contests in stopping, manipulation and turning, as well as prize exhibitions of vehicles after the fashion of horse show competitions.

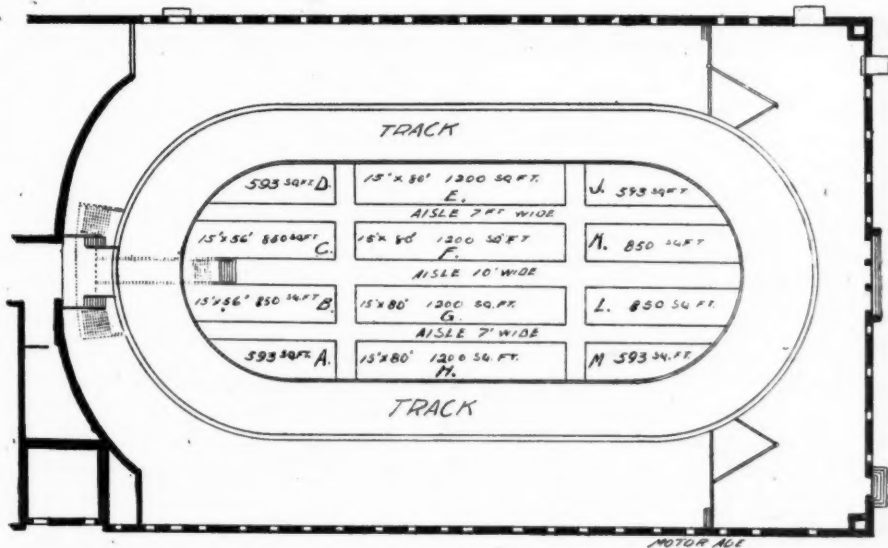
LOCOMOBILE IMPROVEMENTS

The Locomobile Co. of America, despite the fact that they have been rushed to death with orders, have found—or made—time to add a great number of improvements to their No. 2 Locomobile, although keeping the price the same, viz., \$750.

Among the improvements are the following:

Tanks: The water tank will hold fifty per cent more water, namely, twenty-five gallons. The gasoline tank will hold between six and seven gallons, and both gasoline tank and air tank have been made heavier and stronger.

Engine: The engine has been greatly improved and made heavier and stronger, the bearings enlarged and the balls re-



PLAN OF MOTOR-VEHICLE SHOW AT MADISON SQUARE GARDEN.

moved from the eccentric bearings. Cross head supported on both sides.

Feed Water: The water feed pump has been enlarged and connections strengthened. An auxiliary hand water pump provides an additional method of getting water into the boiler.

Safety Valve: The safety valve blows off in the water tank, without noise or appearance of steam.

Auxiliary Throttle Valve: An auxiliary throttle valve has been placed on the carriage and the Locomobile may be operated by this valve as well as by the ordinary throttle. It is so arranged to act as a locking device when the carriage is left without attention.

Water Column: A water column with gauge cocks has been put on the Locomobile, so that in case the water glass should break the water level in the boiler can be determined by the gauge cocks.

Self-Feeding Oil Cup: A self-feeding oil cup has been added, which will, when filled, run for seventy-five miles.

Side Steering Lever: A side steering lever has been introduced.

Dimensions: The carriage body is longer and wider and the seat is roomier and more comfortable. The running gear is also somewhat longer and the tread is now four feet six inches. The carriage will track in a country road.

Draught: A side draught is used instead of the up and down draught. This will prevent the possibility of the fire burning back or blowing out.

ALLEN'S DIGEST OF AUTOMOBILE PATENTS

No work can be of more practical advantage to those interested in the manufacture of horseless carriages or traction engines than the compilation of United States patents made by James T. Allen of the Patent Office, which includes all patents covering motor-vehicles from the first issued by the government to July 1, 1899. Mr. Allen has devoted much time and labor to bringing together from different classes such patents as cover horseless vehicles, and the result is a handsome volume of over 700 pages, bound in sheep, over 500 pages of

which are devoted exclusively to drawings which are photographically reproduced from the originals. The remaining portion is a reproduction of the essential description of the inventions, the claims in full, with full data as to the patent, and further there is furnished a complete index of the references cited against patents while pending as applications, by number, name and date, and also the interferences, if any, the parties thereto, and the decisions. This index is also alphabetical and enables one not only to turn to the full drawings of any patent, the claims, etc., but to see at a glance just what patents preceded it on similar lines. In this compact form, fully indexed, the patent history of automobiles is an open book and the work cannot fail to be both a great time and money saver.

The patents are arranged chronologically under the heads of spring, steam, gas, air, electricity and gearing, while under the head of traction engines are given all the traction engine patents as officially classified. This class, while of great use to traction engine makers, is of no less advantage to makers of automobiles, as so many patents covering traction engines are applicable to the modern horseless carriage, whatever the motive power. There is also a miscellaneous class, which includes some especially applicable patents from various classes.

In the front of the book is a complete list of the patents digested in the work, arranged by the year of issue, and in which it appears that the first patent was granted in 1817, but they did not become numerous till after the war, and of course the great bulk of them have been issued within a few years. In the back of the book are also given lists of patents for portable engines, electric locomotives, etc. The compiler has, as a rule, kept out patents designed especially for vehicles to be run on a track, but has inserted a list of many such patents for those who wish to look them up. He has also inserted a list of patents for battery systems.

The photo-lithography is excellent, all the drawings being models of clearness,

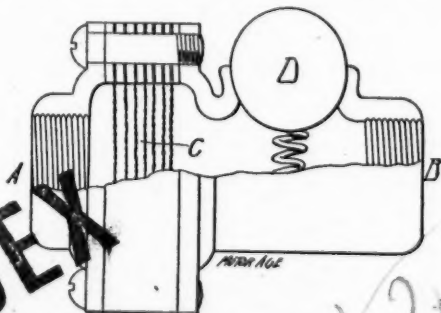
and as they are reproductions of originals there can be no question of their complete accuracy. No drawings are omitted. Every sheet is given. The price of the work is \$25, which, when it is considered how much it would cost anyone to get for himself such a complete work, is exceedingly small. The automobile patents are continued from June 1, 1899, in the Electrical Weekly, which is also compiled by Mr. Allen, and the price of which is \$10 a year. The Digest of Automobile Patents and a subscription to the weekly for a year is \$30. In foreign countries, \$32. The Motor Age, 324 Dearborn Street, Chicago.

GOOD THREADS AND SILKS

It is perfection in small things that goes to make up perfection in the whole. Among the small but still important things that go into a motor-vehicle are the threads and silks. The reliable firm of John C. Meyer & Co., 80 Kingston Street, Boston, Mass., supply threads and silks that are hard twisted and yet pliable and which are guaranteed against fading, rotting and kinking.

THE EMPIRE VALVE

The accompanying illustration shows the back-fire escape valve, manufactured by the Empire Motor Works, of 900 Washington Street, Buffalo. The valve is designed as a safety device for motor-vehicle gasoline engines in case of back-firing, which will happen occasionally in



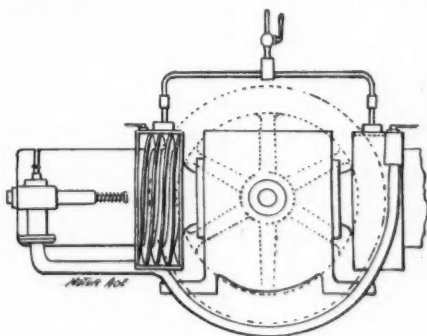
The Empire Back-Firing Valve.

engines of this class. The flame, in such a case, enters B, which is attached near the engine, and, striking C, which is com-

posed of seven layers of very closely meshed wire gauze, is stopped. The pressure raises the ball D and escapes into the open air. Under repeated and severe tests, it was found impossible to force any flame through C. The valve is nicely finished, is made in different sizes, is tapped for standard threads, and sells for \$2.75.

THE MARTHA ALCOHOL MOTOR

The Martha alcohol motor—a French production—is credited by the Chauffeur



Martha Alcohol Motor.

of Paris with being quite a marvel among hydrocarbon engines. It uses ordinary wood alcohol and employs no carburetter, in the sense in which the term carburetter is ordinarily used in reference to internal combustion engines. The spiral which encloses the end of each of the two opposed cylinders, as shown in the accompanying illustration, performs the functions of the carburetter, drawing in a supply of air and alcohol at the end nearest the crank-shaft. The alcohol is sufficiently heated by the warmth of the cylinder to become vaporized and is thoroughly mixed with the air of which a second supply is admitted at the opposite end of the spiral from the first. The amount of this second supply regulates the richness of the mixture.

The mixture becomes heated to such an extent in passing around the cylinder, that, if it were admitted at once to the explosion chamber, it would be of such a temperature as to expand but little from the effects of the internal heat and would therefore show less efficiency than if of a lower temperature at admission.

To obviate this the mixture passes through a long pipe, encircling the fly-wheel, becoming cooled during its passage, and is admitted to the cylinder at the proper temperature.

The Chauffeur claims that it will start, even when cold, with a single turn of the crank shaft, receiving a mixture of sufficient richness to start the engine. The paper also claims that it is not affected by the varying degrees of atmospheric temperature or humidity.

NIAGARA MOTORS

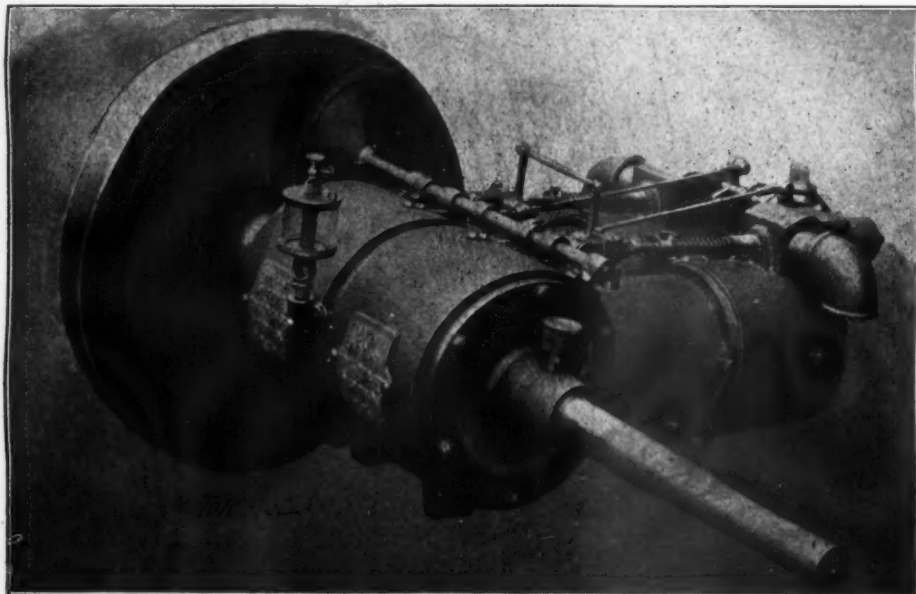
The accompanying illustration shows one of the various sizes of four cycle carriage motors known as Niagara motors, manufactured by the Noye Mfg. Co., of Buffalo, N. Y., who furnish the following details:

These motors are built single and double, in sizes varying from two and one-half to fifteen-horsepower. The pistons are accurately fitted and have three rings. The connecting rod is built in truss form, which insures lightness coupled with strength. Access can be had to the connecting rod by removing the name plate on the crank chamber. On the double motors oil is fed from a single oil cup to the center bearing and also to each crank chamber, where it is

freely distributed over the running parts by the rotating of the crank. The exhaust valves are large, with free openings. A cam gives an easy action to valve, reducing wear and noise. The sparker is of the variable class and can be timed to spark early or late while the motor is running. The variable sparker is also connected to the throttle, so that time of spark is automatically controlled by speed of engine. The sparking plug is in an accessible position and a peep-hole is provided to determine the quality of the spark. The contact produces what is called a drawn spark. The action of the points is such that they come together without hammering. After they come together the pressure increases sufficiently to go through any ordinary grease or oil. In tripping, the sparking points separate fully one-half inch and return to rest one-eighth inch from contact. By simply unscrewing the sparking plug both contacts are open for inspection. The company also manufacture two cycle marine motors of various sizes.

AUTOS AT THE PARIS EXPOSITION

Cleveland, June 11.—Mr. Oliver, of the well known machinery firm of Bardons & Oliver, this city, returned from abroad a



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THE MOTOR AGE

159 Nassau Street, NEW YORK

few days ago. He has been calling on the machinery trade in all European countries, paying especial attention to the manufacture of automobiles. The automatic machines built by this company are especially adapted for the use of automobile work, producing hubs and small parts, and they have acquired a widespread reputation. He succeeded in securing several good contracts for both machines and hubs. It might be added that in this country the firm has equipped a number of well known makers with hub machines, among them the Mobile Co., the Locomobile Co. of America and the Winton Motor Carriage Co.

Mr. Oliver attended the Paris exposition and expressed himself as rather disappointed with the show. Many of the leading departments were still in a chaotic state and it will be weeks before they are in satisfactory order; some of them will probably not be complete before the close of the event at the rate they are getting along. The machinery departments are in especially bad order and the American exhibitors seem to be as far behind as the others, much to their discredit; though Mr. Oliver is of the opinion that the blame lies largely with the officials of the exhibition, who are so wrapped about by red tape rules and regulations that it is almost impossible to secure satisfactory results.

Mr. Oliver was particularly impressed with the large variety of automobiles on exhibition. The French, of course, are in the lead in matter of numbers, but the few American machines exhibited are, in his opinion, superior in workmanship and design. Among the makes noticed were those of the Locomobile Co. and the Cleveland Machine Screw Co. The latter concern is shipping all its machines to France as fast as they are built, as they have made a very favorable impression and are in great demand at very good prices.

THE GREAT RIKER FACTORY

New York, June 7.—A Motor Age man recently visited the great plant of the Riker Electric Vehicle Company at Elizabethport, N. J. Mr. Ryllesby, who is

now at the helm, took him through the enormous factory. Your correspondent had visited the place some three or four months ago and saw then little more than the extensive buildings, embracing fully twenty spacious shops. These are now all busy departments, with a total factory capacity of five vehicles a day with present tools and facilities.

The Motor Age man saw vehicles by the score, of every conceivable model and pattern, in course of construction—delivery wagons, emergency wagons for trolley line repair service, ambulances, pie wagons, cabs, runabouts, demi-coaches, phaetons, surreys, brakes, and seemingly specimens of the entire family of carriages. It was a marvelous accomplishment in a few months.

"We are to build gasoline and also steam vehicles," said Mr. Byllesby, "but I am a great believer in the future of electricity. The great improvements will be along the line of storage batteries. It will not be long before all the electric light and trolley lines will have frequent storage stations, where one can get a change of batteries by a tag system."

Mr. Byllesby is one of the best known electrical men in the United States, having been president of such companies as the Thompson-Houston and other big electrical corporations, and his opinion should go for much, both as an electrical engineer and a business man in electricity.

He was especially well pleased with the showing made by the Riker electric vehicles in the recent Philadelphia run. All three of them got through. On the return trip one of the ordinary stock phaetons averaged over eleven miles an hour and the other over thirteen, including ferries and all stops save for fresh batteries. Mr. Riker's racing machine on the way home ran forty-two miles without change or recharging of batteries.

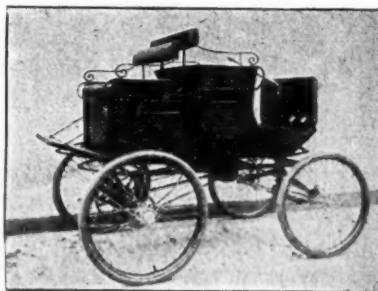
THE CUBAN TARIFF

Washington, June 11.—The Secretary of War has made public the provisions of the new Cuban tariff, which will go into effect on June 15, 1900, and continue in force one year without change. Under

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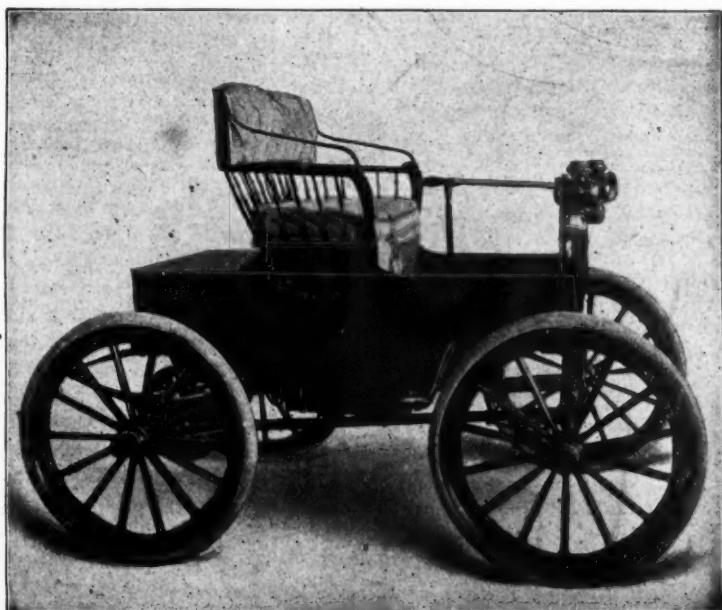
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its provisions the following duties are chargeable on automobiles:

(a) Coaches and berlins, new, used, or repaired, twenty-five percent ad valorem.

(b) Tramway carriages of all kinds, twenty-five percent ad valorem.

Lamps, rubber tires and other accessories or detached parts of automobiles are included under the above classifications.

EASTERN TRADE NOTES

New York, June 11.—The Automobile Co. of America, with factory at Reading, Pa., and New York headquarters at 135 Broadway, New York (not to be confused with the other company of the same name, with factory at Marion, N. J., and offices at 32 Broadway), has in course of construction ten steam vehicles. One has been completed and the tests of it have proved highly satisfactory. The other nine vehicles will also be tested before the final models are selected and building of automobiles in quantity begins in a greatly enlarged factory. Leon Schemmerhorn, well known in the cycle trade, is interested in this concern.

The American Automobile Co.'s factory at Springfield, Mass., is reported by Mr. Reynolds, its New York representative, to

be 1,500 machines behind orders, and in fact to have work ahead for two years. New automatic machinery is shortly to be added and ground for an additional factory is now being sought.

TESTING NEW VEHICLES

Cleveland, June 11.—R. M. Owen, of the Phoenix Automobile Co., and Frank Stearns, of the F. P. Stearns Mfg. Co., made a run to Painesville, thirty miles, to test new vehicles which they have recently completed. They covered the distance in a trifle more than two hours. Both concerns mentioned are preparing to manufacture vehicles of the gasoline type and both have completed several experimental machines.

AGENCIES WANTED

James Lochrie, the manufacturer of a well known Canadian bicycle, writes from Toronto that he is open for the agency for a reliable steam or gasoline motor-vehicle and would be glad to enter into correspondence with manufacturers.

From Topeka, Kansas, A. S. Akers writes in the same strain. He may be addressed care of Crosby Bros., Topeka.

MOTOR RACING AND MOTOR PACING

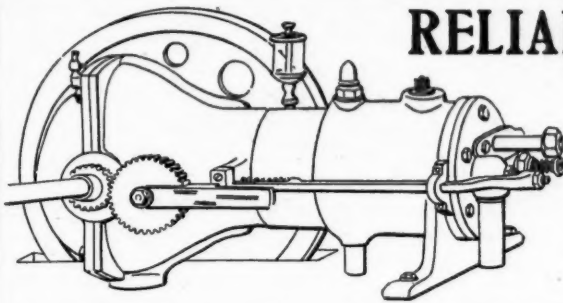
FAST WORK BACK OF PACE

New Bedford, June 9.—Jimmy Michael drew a large crowd to the cycle track today. He was billed to go for ten miles back of pace, but after having ridden five miles in 8:12, his pedal came off and he escaped a fall only to quit because he had no other machine. Michael rode in quite his old-time style, following the motor with tires rubbing all the way. He went his first mile in 1:31, a record for gasoline motor pace and an N. C. A. mark, being lower than the record by Harry Elkes of 1:31 1-5, made at Washington. Michael's second mile was 1:36 2-5,

the third 1:39 3-5, fourth 1:43, and the fifth 1:42. His motor team went out later and did a mile against the record of 1:20 2-5 by Miller and Judge and made at Montreal May 24 on the third-of-a-mile track at Queens Park. The first quarter was ridden in :20, the half in :40 and the three-quarter in 1:00 4-5, the mile being completed in 1:21.

RACES AT INTER-STATE FAIR

Philadelphia, June 11.—Some years ago the progressive management of the Inter-State Fair Association, of Trenton, N. J., abandoned horse racing as an at-



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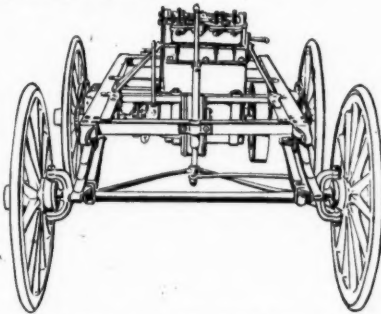
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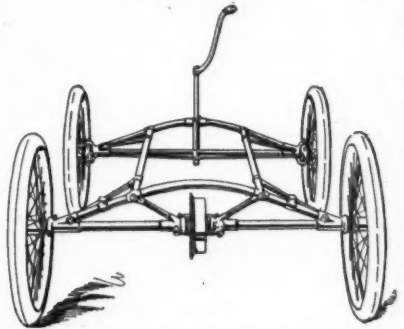
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traction and substituted in lieu thereof bicycle contests, and with excellent financial results. It was at the annual races of this organization, by the way, that the professionals first jumped the League traces and decided to "gang their ain gait." Now the association, in its search for drawing cards for the coming September's races has decided to abandon the pedal pushers and will substitute a series of automobile contests to be run on the opening day. The races will be run under the auspices of the Automobile Club of America and will be participated in (so the fair management was assured by a prominent A. C. of A. official) by specimens of the handiwork of every prominent maker of self-propelled vehicles in the United States. The Inter-State Fair people have never been niggardly when it came to hanging up money for prizes for speed contests of any kind, and it is asserted that in the present instance they will fairly outdo themselves in the liberality of the prizes offered.

AUSTRALIAN MOTOR PACED RACE

Sydney, May 9.—On April 28 a three-mile motor-paced race was contested at the Hospital Sports, held in Melbourne on the exhibition track. In the preliminary heats of the event Walne defeated McDonald and Beauchamp downed Morgan. Bobby Walne and Frank Beauchamp therefore faced the starter for the final, which produced one of the finest struggles yet witnessed on an Australian track. Walne won the toss for choice of motor and he selected W. Lewis' motor, which had shown slightly the best form in the heats. Beauchamp had O. S. Prowse's motor. Both riders, before starting, were confident of victory, and some heavy betting took place on the race, Beauchamp being a slight favorite. From a flying start Beauchamp with the inside running—a big advantage on the exhibition track—took up the running at a 1:50 clip, Walne and his motor being content to drop in behind Beauchamp, thus covering as little ground as possible. The same positions were held until the beginning of the last mile, when Walne's motor started creeping up on the

leading machine. At four laps to go Walne and his pacers made a great effort to pass Beauchamp and his team, and after fighting for half a lap succeeded in drawing almost a motor length ahead, but not sufficient to cut down for the inside running. As the aquarium corner was reached Beauchamp's motor, with an effort, and the advantage of the inside running around the sharp bend, drew level with Walne's machine, and they rode in this position for another lap, when Walne again tried to get by, only to lose the slight advantage gained when the bad corner was again reached. As the motors and riders crossed the line for the last lap the thousands present could no longer restrain themselves, and amid deafening cheers the motors swung round into the back straight, racing neck and neck. Walne at this point seemed slightly in trouble, and he dropped back a foot or two from the back wheel of his motor; but his gameness came to his rescue and he closed on to his machine again for a final effort. At the aquarium corner the pace was tremendous, Beauchamp having a slight advantage; but gradually Walne crept up, inch by inch, foot by foot, until the two motors were again dead level. A few yards from the post Beauchamp made a desperate attempt to run up between the two motors, and succeeded in lapping his front wheel with the back wheel of his pacers, whilst Walne was coming like a shot from a gun, but too late, for when the pistol fired Beauchamp led by three feet, with the motors a dead heat. Both contestants were greeted by vociferous and prolonged cheering. The time for the three miles was 5:39, the last mile being ridden in 1:48 2-5.

MOTOCYCLETTA CRITERIUM

Paris, June 1.—The criterium for motocyclettes or motor bicycles was decided yesterday, resulting in a victory for August Buquet, who covered the Etampes-Ablis twenty-five kilometer course four times in 2:17:11, breaking the previous record by 21 minutes and 45 seconds and averaging forty-four kilometers (27½ miles) to the hour. The race was warmly contested. Cousin and Rivierre



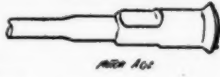
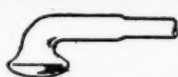
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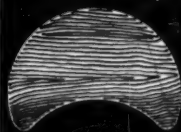
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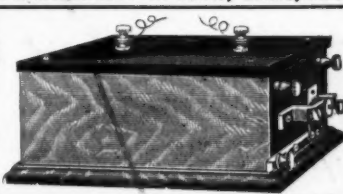
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had trouble with the belts of their machines in the latter part of the contest, or it might have resulted differently. The motorcycles were all below forty kilograms (eighty-eight pounds) in weight. The names of the first five of the thirteen finishers, with the weights of their machines and times, are as follows:

1. A. Buquet	39	2:17:11
2. Bonnard	38½	2:18:38 1-5
3. Cousin	38½	2:21:19
4. Leonard	38½	2:22:00 2-5
5. Garreau	37	2:33:51 1-5

BIG MOTOR-VEHICLE PACEMAKERS

It has rather astonished me since the Automobile Club's trip finished, so many people have said they were glad to see me back safe, writes S. F. Edge, the English cycling celebrity, who followed the British 1,000-miles trial on his bicycle. I don't object altogether to the implied joy on the part of beholders at seeing me once more, but it does seem strange that the journey should have been generally considered so fraught with peril as to occasion congratulations as to one's escape from accident, death, disease, or whatever it is that the congratulators fancy ought to have afflicted the thousand-milers. Also it tickled me somewhat to find that riding a bicycle created so much comment, whereas apart from the discomfort on a dirty day, the physical exertion of riding in the wake of a motor car is so enormously reduced compared with riding in the open, that, so long as the rider made judicious selection of the vehicle to which he attached himself, he could do feats thus helped which seemed much more imposing than they really were. It really was a trifle too bad of some of my friends to be so surprised that I rode to Bristol in ten hours or so, motor paced. I felt extremely cheap at being congratulated on a journey that could not by any manner of means be magnified into a performance when viewed in

the correct perspective. I am not a believer in the theory that a man behind a motor car has no work to do, but I do know this, that the difference between being behind in the vortex, and being alone out in the open, makes any motor-paced ride utterly feeble as a feat unless it numerically excels anything and everything that has ever been achieved without such aid by an enormous margin. When Edge last year toured down to the Wilderness to help record breakers, men hung on with ease to the rear of his car at a 2 minute 5 second pace for miles, whose best form for a single mile, all out and done with at the end of one mile, was only about 2 minutes 40 seconds. The invisible air-pull is virtually a means of towing the hanger on, so far as the extra speed is concerned. He has to ride a bit to get that extra help. It isn't pure towing, of course, and motor pacing, carried to a limit, would sort men out and let the best come to the front as before, but when a motor-paced ride only by a small margin excels a ride not so paced, then it deserves ridicule as distinctly cheap, if it is by unthinking people admired as of the nature of something wonderful. Just as equal motor pacing will sort out men at speeds equal to their own effort, plus the suck of the motor car, so the equality of no pacing at all will still leave the sorting-out process to be just as interesting a sport at far less ferocious rates, and that alone is the only feasible field for any road sport to continue. Hurret has shown us that thirty miles an hour for several hours on end is possible on a hilly road behind cars. Nothing has been done approaching this on the flat roads of the fens in the few motor-paced rides we have had, and anything short of this must be mediocre in comparison if the help he had is allowed. Abolish it, and though speeds drop, and the numerical value of records must be less, yet their intrinsic interest as unaided performances must be far greater to those who follow the sport at all.



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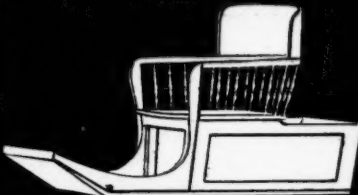
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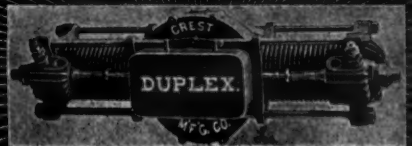
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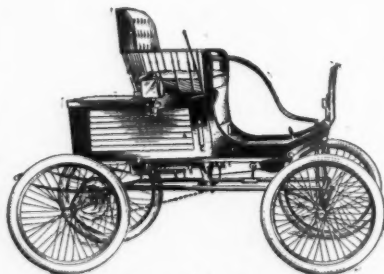
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